

Search Plan and Results

Question

[Is dietary energy density associated with adiposity in children? \(DGAC 2010\)](#)

Date Searched

6/25/2009

Inclusion Criteria

- January 1980 to June 2009
- Human subjects
- English language
- International
- Sample size: Minimum of 10 subjects per study arm; preference for larger sizes, if available
- Dropout rate:
- Ages: Children zero to 18 years
- Populations: Healthy, those with elevated chronic disease risk and those diagnosed with the highly prevalent chronic diseases (CHD or CVD, hypertension, type 2 diabetes, osteoporosis, osteopenia and obesity).

Exclusion Criteria

- Medical treatment or therapy
- Diseased subjects
- Hospitalized patients
- Malnourished or third-world populations, or disease incidence not relative to US population, (e.g., malaria)
- Animal studies
- In vitro studies
- Articles not peer reviewed (web sites, magazine articles, Federal reports, etc.)
- Cross-sectional studies.

Search Terms: Search Vocabulary

("energy density" OR caloric density OR energy dense) AND ("Body Weight"[Mesh] OR "Body Mass Index"[Mesh])

Electronic Databases

Pubmed.

Total hits from all electronic database searches: 184

Total articles identified to review from electronic databases: 35

Articles Identified Via Handsearch or Other Means

Articles identified via hand search: 1

Summary of Articles Identified to Review

Number of Primary Articles Identified: 5

Number of Review Articles Identified: 0

Total Number of Articles Identified: 5

Number of Articles Reviewed but Excluded: 31

List of Articles Included for Evidence Analysis

Included Articles (5)

Alexy U, Sichert-Hellert U, Kersting M, Schultze-Pawlitscko V. Pattern of long-term fat intake and BMI during childhood and adolescence-results of the DONALD Study. *Int J Obes Metab Disord.* 2004; 28(10): 1, 203-1, 209.

Johnson L, Mander AP, Jones LR, Emmett PM, Jebb SA. [Energy-dense, low-fiber, high-fat dietary pattern is associated with increased fatness in childhood.](#) *Am J Clin Nutr.* 2008 Apr; 87(4): 846-854. PMID: 18400706.

Johnson L, Mander AP, Jones LR, Emmett PM, Jebb SA. [A prospective analysis of dietary energy density at age 5 and 7 years and fatness at 9 years among UK children.](#) *Int J Obes (Lond).* 2008 Apr; 32(4): 586-593. Epub 2007 Oct 2. PMID: 17912267.

Johnson L, van Jaarsveld CH, Emmett PM, Rogers IS, Ness AR, Hattersley AT, Timpson NJ, Smith GD, Jebb SA. [Dietary energy density affects fat mass in early adolescence and is not modified by FTO variants.](#) *PLoS One.* 2009; 4(3): e4594. Epub 2009 Mar 4. PMID: 19259258; PMCID: PMC2644761.

McCaffrey TA, Rennie KL, Kerr MA, Wallace JM, Hannon-Fletcher MP, Coward WA, Jebb SA, Livingstone MB. [Energy density of the diet and change in body fatness from childhood to](#)

[adolescence; is there a relation? Am J Clin Nutr. 2008 May; 87\(5\): 1, 230-1, 237. PMID: 18469244.](#)

List of Excluded Articles with Reason

| Article (A-L) | Reason for Exclusion |
|---|--|
| Briefel RR, Crepinsek MK, Cabili C, Wilson A, Gleason PM. School food environments and practices affect dietary behaviors of US public school children. Diet Assoc. 2009 Feb; 109(2 Suppl): S91-S107. PMID: 19166677. | Does not answer the question; focuses on school environment and calories from foods, but no body weight measures. |
| Briefel RR, Wilson A, Gleason PM. Consumption of low-nutrient, energy-dense foods and beverages at school, home, and other locations among school lunch participants and nonparticipants. J Am Diet Assoc. 2009 Feb; 109(2 Suppl): S79-S90. PMID: 19166676. | Does not answer the question; focuses on school environment, home behaviors and calories from foods, but no body weight measures. |
| Brown KH, Sanchez-Griñan M, Perez F, Peerson JM, Ganoza L, Stern JS. Effects of dietary energy density and feeding frequency on total daily energy intakes of recovering malnourished children. Am J Clin Nutr. 1995 Jul; 62(1): 13-18. PMID: 7598055. | Subjects are malnourished. |
| Caballero B. Obesity prevention in children: Opportunities and challenges. Int J Obes Relat Metab Disord. 2004 Nov; 28 Suppl 3: S90-S95. Review. PMID: 15543227. | Study is a narrative review. |
| Epstein LH, Paluch RA, Beecher MD, Roemmich JN. Increasing healthy eating vs. reducing high energy-dense foods to treat pediatric obesity. Obesity (Silver Spring). 2008 Feb; 16(2): 318-326. PMID: 18239639; PMCID: PMC2408744. | Does not answer the question; examines high energy-dense foods, not dietary energy density. |
| Epstein LH, Robinson JL, Temple JL, Roemmich JN, Marusewski AL, Nadbrzuch RL. Variety influences habituation of motivated behavior for food and energy intake in children. Am J Clin Nutr. 2009 Mar; 89(3): 746-754. Epub 2009 Jan 28. PMID: 19176724; PMCID: PMC2667657. | Does not answer the question; did not examine the relationship between dietary energy density and adiposity. |
| Fox MK, Dodd AH, Wilson A, Gleason PM. Association between school food environment and practices and body mass index of US public school children. J Am Diet Assoc. 2009 Feb; 109(2 Suppl): S108-S117. PMID: 19166665. | Study design is cross-sectional. |
| Fox MK, Gordon A, Nogales R, Wilson A. Availability and consumption of competitive foods in US public schools. J Am Diet Assoc. 2009 Feb; 109(2 Suppl): S57-S66. PMID: 19166673. | Does not answer the question; focuses on school environment and calories from foods, but no body weight measures or relationship to obesity. |
| Hartstein J, Cullen KW, Reynolds KD, Harrell J, Resnicow K, Kennel P; STOPP T2D Prevention Study Group. Impact of portion-size control for school a la carte items: Changes in kilocalories and macronutrients purchased by middle school students. J Am Diet Assoc. 2008 Jan; 108(1): 140-144. PMID: 18156001. | Does not answer the question; focuses on school environment and calories from foods, but no body weight measures or relationship to obesity. |

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| <p>Hurley KM, Oberlander SE, Merry BC, Wrobleki MM, Klassen AC, Black MM. The healthy eating index and youth healthy eating index are unique, nonredundant measures of diet quality among low-income, African American adolescents. <i>J Nutr.</i> 2009 Feb; 139(2): 359-364. Epub 2008 Dec 11. PMID: 19074210; PMCID: PMC2646206.</p> | <p>Study design is cross-sectional.</p> |
| <p>Islam MM, Peerson JM, Ahmed T, Dewey KG, Brown KH. Effects of varied energy density of complementary foods on breast-milk intakes and total energy consumption by healthy, breastfed Bangladeshi children. <i>Am J Clin Nutr.</i> 2006 Apr; 83(4): 851-858. PMID: 16600938.</p> | <p>Does not answer the question; energy density of food intake related to breast-milk intake and not body weight.</p> |
| <p>Kral TV, Berkowitz RI, Stunkard AJ, Stallings VA, Brown DD, Faith MS. Dietary energy density increases during early childhood irrespective of familial predisposition to obesity: Results from a prospective cohort study. <i>Int J Obes (Lond).</i> 2007 Jul; 31(7): 1, 061-1, 067. Epub 2007 Feb 20. PMID: 17589540.</p> | <p>Does not answer the question.</p> |
| <p>Kral TV, Stunkard AJ, Berkowitz RI, Stallings VA, Brown DD, Faith MS. Daily food intake in relation to dietary energy density in the free-living environment: A prospective analysis of children born at different risk of obesity. <i>Am J Clin Nutr.</i> 2007 Jul; 86(1): 41-47. PMID: 17616761.</p> | <p>Does not measure body weight.</p> |
| <p>Leahy KE, Birch LL, Rolls BJ. Reducing the energy density of an entrée decreases children's energy intake at lunch. <i>J Am Diet Assoc.</i> 2008 Jan; 108(1): 41-48. PMID: 18155988.</p> | <p>Does not answer the question; did not examine the relationship between dietary energy density and adiposity.</p> |
| <p>Leahy KE, Birch LL, Rolls BJ. Reducing the energy density of multiple meals decreases the energy intake of preschool-age children. <i>Am J Clin Nutr.</i> 2008 Dec; 88(6): 1, 459-1, 468. PMID: 19064504.</p> | <p>Does not answer the question; did not examine the relationship between dietary energy density and adiposity.</p> |
| <p>Lin CA, Manary MJ, Maleta K, Briand A, Ashorn P. An energy-dense complementary food is associated with a modest increase in weight gain when compared with a fortified porridge in Malawian children aged 6-18 months. <i>J Nutr.</i> 2008 Mar; 138(3): 593-598. PMID: 18287372.</p> | <p>Study subjects are malnourished.</p> |
| <p>Lioret S, Volatier JL, Lafay L, Touvier M, Maire B. Is food portion size a risk factor of childhood overweight? <i>Eur J Clin Nutr.</i> 2009 Mar; 63(3): 382-391. Epub 2007 Nov 21. PMID: 18030311.</p> | <p>Does not answer the question; did not examine the relationship between dietary energy density and adiposity.</p> |
| <p>Lorson BA, Melgar-Quinonez HR, Taylor CA. Correlates of fruit and vegetable intakes in US children. <i>J Am Diet Assoc.</i> 2009 Mar; 109(3): 474-478. PMID: 19248865.</p> | <p>Does not answer the question; did not examine the relationship between dietary energy density and adiposity.</p> |

| Article (M-S) | Reason for Exclusion |
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| <p>Maffeis C, Grezzani A, Perrone L, Del Giudice EM, Saggesse G, Tatò L. Could the savory taste of snacks be a further risk factor for overweight in children? <i>J Pediatr Gastroenterol Nutr.</i> 2008 Apr; 46(4): 429-437. PMID: 18367957.</p> | <p>Study design is cross-sectional.</p> |

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| <p>Matheson DM, Robinson TN, Varady A, Killen JD. Do Mexican-American mothers' food-related parenting practices influence their children's weight and dietary intake? <i>J Am Diet Assoc.</i> 2006 Nov; 106(11): 1, 861-1, 865. PMID: 17081838.</p> | <p>Does not answer the question; did not examine the relationship between dietary energy density and adiposity.</p> |
| <p>Mendoza JA, Drewnowski A, Cheadle A, Christakis DA. Dietary energy density is associated with selected predictors of obesity in U.S. Children. <i>J Nutr.</i> 2006 May; 136(5): 1, 318-1, 322. PMID: 16614423.</p> | <p>Study design is cross-sectional.</p> |
| <p>Mrdjenovic G, Levitsky DA. Children eat what they are served: The imprecise regulation of energy intake. <i>Appetite.</i> 2005 Jun; 44(3): 273-282. Epub 2005 Apr 14. PMID: 15927729.</p> | <p>Does not answer the question; did not examine the relationship between dietary energy density and adiposity.</p> |
| <p>Murakami K, Sasaki S, Takahashi Y, Uenishi K; Japan Dietetic Students' Study for Nutrition and Biomarkers Group. Dietary energy density is associated with body mass index and waist circumference, but not with other metabolic risk factors, in free-living young Japanese women. <i>Nutrition.</i> 2007 Nov-Dec; 23(11-12): 798-806. PMID: 17936194.</p> | <p>Study subjects are adults.</p> |
| <p>Newby PK. Are dietary intakes and eating behaviors related to childhood obesity? A comprehensive review of the evidence. <i>J Law Med Ethics.</i> 2007 Spring; 35(1): 35-60. Review. PMID: 17341216.</p> | <p>Study is a narrative review.</p> |
| <p>Phillips SM, Bandini LG, Naumova EN, Cyr H, Colclough S, Dietz WH, Must A. Energy-dense snack food intake in adolescence: Longitudinal relationship to weight and fatness. <i>Obes Res.</i> 2004 Mar; 12(3): 461-472. PMID: 15044663.</p> | <p>Does not answer the question; examined high energy-dense foods, not dietary energy density.</p> |
| <p>Pridham K, Kosorok MR, Greer F, Carey P, Kayata S, Sondel S. The effects of prescribed versus ad libitum feedings and formula caloric density on premature infant dietary intake and weight gain. <i>Nurs Res.</i> 1999 Mar-Apr; 48(2): 86-93. PMID: 10190835.</p> | <p>Does not answer the question; did not examine the relationship between dietary energy density and adiposity.</p> |
| <p>Rangan AM, Randall D, Hector DJ, Gill TP, Webb KL. Consumption of 'extra' foods by Australian children: Types, quantities and contribution to energy and nutrient intakes. <i>Eur J Clin Nutr.</i> 2008 Mar; 62(3): 356-364. Epub 2007 Mar 14. PMID: 17356553.</p> | <p>Does not answer the question; did not examine the relationship between dietary energy density and adiposity.</p> |
| <p>Receveur O, Morou K, Gray-Donald K, Macaulay AC. Consumption of key food items is associated with excess weight among elementary-school-aged children in a Canadian first nations community. <i>J Am Diet Assoc.</i> 2008 Feb; 108(2): 362-366. PMID: 18237583.</p> | <p>Study design is cross-sectional.</p> |
| <p>Renzaho AM, Swinburn B, Burns C. Maintenance of traditional cultural orientation is associated with lower rates of obesity and sedentary behaviours among African migrant children to Australia. <i>Int J Obes (Lond).</i> 2008 Apr; 32(4): 594-600. Epub 2008 Feb 5. PMID: 18253161.</p> | <p>Does not answer the question; did not examine the relationship between dietary energy density and adiposity.</p> |

| Article (T-Z) | Reason for Exclusion |
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| <p>Temple JL, Giacomelli AM, Roemmich JN, Epstein LH. Dietary variety impairs habituation in children. <i>Health Psychol.</i> 2008 Jan; 27(1 Suppl): S10-S19. PMID: 18248101; PMCID: PMC2291292.</p> | <p>Does not answer the question; did not examine the relationship between dietary energy density and adiposity.</p> |

Thomson M, Spence JC, Raine K, Laing L. [The association of television viewing with snacking behavior and body weight of young adults.](#) Am J Health Promot. 2008 May-Jun; 22(5): 329-335. PMID: 18517093.

Does not answer the question; did not examine the relationship between dietary energy density and adiposity.